TCS-214

Tactical Control System (TCS)

to

Joint Maritime Command Information System (JMCIS)

Interface Design Description (IDD)

Contract Number

CDRL Number

Prepared for:
Program Executive Officer, Cruise Missiles Project
and Unmanned Air Vehicles Joint Project

Prepared by:
Naval Surface Warfare Center
Dahlgren Division

1 December 1997
Version 1.1

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CHANGE RECORD

THIS SHEET IS A RECORD OF EACH ISSUE OF THIS DOCUMENT. WHEN THE REVISED DOCUMENT IS ISSUED, THE PREVIOUS ISSUE IS AUTOMATICALLY SUPERSEDED.

REV.	DATE	PAGES CHANGED	*S	*A	REASON FOR CHANGE
1.1	3 Nov 97	3-1, 3-2, 3-7, 3-8, 3-9, 3-10, 4-1, 4-2,4-3			Changed in response to STR CI0015 which recommended traceability to the SSDD.

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1. Scope

1.1 Identification

This Tactical Control System (TCS) - Interface Design Description (IDD) Version 1.1 identifies, specifies, and establishes the detailed interface requirements for the TCS Joint Maritime Command Information System Version 2.2/3.X as set forth by both the TCS System/Subsystem Specification (SSS) Version 1.0 and the TCS System/Subsystem Design Description (SSDD) Version 1.0. This IDD is written to comply with TCS Operational Requirements Document (ORD) Requirement Number ORD069. This IDD specifies requirements levied on the TCS, and does not impose any requirements on the Command, Control, Communication, Computers, and Intelligence (C^4I) System addressed in this document. This IDD further specifies the methods to be used to ensure that each system interface requirement has been met. This IDD is published in accordance with Data Item Description (DID) DI-IPSC-81436, dated 941205, and modified to incorporate the qualification provisions section that is traditionally found in the Interface Requirements Specification (IRS). This IDD will be revised at the conclusion of the Program Definition and Risk Reduction period of the TCS program and will be re-issued in final form to be used during the follow-on TCS Engineering and Manufacturing Development period.

1.2 System Overview

The purpose of the TCS is to provide the military services with a single command, control, data receipt, data processing, data export and dissemination device that is interoperable with the family of all present and future Tactical Unmanned Aerial Vehicle (TUAV) and designated C^4I systems.

These UAVs include the TUAV and the Medium Altitude Endurance (MAE) UAV (henceforth referred to as Outrider and Predator respectively), and their associated payloads. TCS will also be capable of receiving and processing information from High Altitude Endurance (HAE) UAVs, HAE UAV payloads, and with future tactical UAVs and payloads.

1.2.1 TCS Program, Phases, and UAV Interaction

The Unmanned Aerial Vehicle Joint Program Office (UAV JPO) has undertaken development of a TCS for UAVs. Design and development of the TCS will be conducted in two phases . Phase 1 is defined as the Program Definition and Risk Reduction phase, and Phase 2 is defined as the Engineering and Manufacturing Development phase in accordance with Department of Defense Instruction (DoDI) - 5000.2R. During Phase 2, TCS Low Rate Initial Production (LRIP) will commence. Phase 1 will be a 24-month period and will demonstrate Level 1 through Level 5 interaction (as defined below) in an incremental and evolutionary strategy as described in accordance with MIL-STD-498.

The five discrete levels of multiple UAV interaction to be provided by the TCS are:

Level 1: Receipt and transmission of secondary imagery and/or data

Level 2: Direct receipt of imagery and/or data

Level 3: Control of the UAV payload in addition to direct receipt of imagery/data

Level 4: Control of the UAV, less launch and recovery, plus all the functions of Level 3

Level 5: Capability to have full function and control of the UAV from takeoff to landing

1.2.2 Tactical Control System Overview

The TCS is the software, software-related hardware, and the extra ground-support hardware necessary for the control of the TUAV, and the MAE UAV, Pioneer, and future TUAVs. The TCS will also provide connectivity to specific C^4I systems. TCS will have the objective capability of receiving HAE UAV payload information. Although developed as a total package, the TCS will be scaleable to meet the user's requirements for deployment. TCS will provide a common Human-Computer Interface (HCI) for tactical airborne platforms to simplify user operations and training, and facilitate seamless integration into the Services' joint C^4I infrastructure across all levels of interaction.

1.2.2.1 Software

The major focus of the TCS program is software. The software will provide the UAV operator the necessary tools for computer-related communications, mission tasking, mission planning, mission execution, data receipt, data processing, limited data exploitation and data dissemination. The software will provide a high-resolution, computer-generated graphics user interface that enables a UAV operator trained on one system to control different types of UAVs or UAV payloads with a minimum of additional training. The TCS will operate in an open architecture and be capable of being hosted on computers that are typically supported by the using Service. Software developed will be compliant with the Defense Information Infrastructure/Common Operating Environment (DII/COE), non-proprietary, and it is intended to become the architectural standard for all future TUAVs. The TCS will use standard Department of Defense (DoD) software components wherever possible to achieve maximum commonality. TCS will provide software portability, scaleable functionality, and support for operational configurations tailored to the users' needs.

1.2.2.2 Hardware

The TCS will use standard DoD components to the greatest extent possible in order to achieve maximum commonality. The TCS also will use the computing hardware specified by the Service-specific procurement contracts. The individual armed services will identify TCS computing hardware, the desired level of TCS functionality, the battlefield C^4I connectivity, and the particular type of Air Vehicle (AV) and payloads to be operated, and the TCS hardware must be capable of further being scaled or modularized to meet varying Service needs. TCS hardware will permit long-range communications from one TCS to another, data storage expansion, access to other computers to share their processing capability, and multiple external peripherals.

1.2.2.3 System Compliance

The TCS will be developed in compliance with the following military and commercial computing systems' architecture, communications processing, and imagery architecture standards:

a) Defense of Defense Joint Technical Architecture (JTA), including but not limited to:

    1. Variable Message Format (VMF) and Joint Message Format (JMF)
    2. National Imagery Transmission Format (NITF)

b) Defense Information Infrastructure/Common Operating Environment DII/COE

c) Computer Open Systems Interface Processor (COSIP)

d) Common Imagery Ground/Surface System (CIGSS) Segment of Distributed Common Ground Station (DCGS).

1.2.2.4 Integration with Joint C^4I Systems

The TCS will be capable of entering DII/COE compliant networks, and TCS integration with C^4I systems will be accomplished through development of interfaces that permit information exchange between the TCS and specified C^4I systems. Network interoperability will include but not be limited to:

Advanced Field Artillery Tactical Data System (AFATDS)
Advanced Tomahawk Weapons Control System (ATWCS)
Air Force Mission Support System (AFMSS)
All Source Analysis System (ASAS)
Army Mission Planning System (AMPS)
Automated Target Hand-off System (ATHS)

Closed Circuit Television (CCTV)
Common Operational Modeling, Planning, and Simulation Strategy (COMPASS)
Contingency Airborne Reconnaissance System (CARS)
Enhanced Tactical Radar Correlator (ETRAC)
Guardrail Common Sensor/Aerial Common Sensor (GCS/ACS) Integrated Processing Facility (IPF)
Intelligence Analysis System (IAS)
Joint Deployable Intelligence Support System (JDISS)
Joint Maritime Command Information System (JMCIS)
Joint Service Imagery Processing System-Air Force (JSIPS)
Joint Service Imagery Processing System-Navy (JSIPS-N)
Joint Surveillance Target Attack Radar System (JSTARS) Ground Station Module/Common Ground Station (GSM/CGS)
Modernized Image Exploitation System (MIES)
Tactical Aircraft Mission Planning System (TAMPS)
Tactical Exploitation Group (TEG)
Tactical Exploitation System (TES)
Theater Battle Management Core System (TBMCS)
TROJAN Special Purpose Integrated Remote Intelligence Terminal (SPIRIT) II

The TCS will export and disseminate UAV imagery products, tactical communication messages, as well as mission plans and target coordinates. The TCS will also receive, process, and display tasking orders and operational information from Service-specific mission planning systems.

1.2.3 JMCIS 2.X/3.X System Overview

JMCIS is a Navy command information system which is typically distributed across a Local Area Network (LAN) of workstations. An operator is able to access required functionality from designated workstations, regardless of where the actual processing takes place on the LAN. Through interfaces the operator may transmit, receive, and access data from various Navy-specific or joint sources and systems. Applications exist for supporting intelligence, tactical planning and decision making, cryptologic support, imagery, meteorology/oceanography, communications, undersea (surveillance), briefing support, logistics, training, North Atlantic Treaty Organization (NATO) support, ocean surveillance and data base management.

1.3 Document Overview

The purpose of this document is to provide an overview of the TCS and define the interface to the JMCIS Version 2.2/3.X.

This document was developed using MIL-STD-498 (Data Item Description DI-IPSC-84136) as a guide, and is divided into the following sections:

Section 1	Scope: Provides identification of the systems, interfacing entities, and interfaces which are addressed in this IDD, and it gives a brief overview of these systems.
Section 2	Referenced Documents: Lists all referenced documents applicable to this development effort.
Section 3	Interface Design: Identifies and describes the characteristics of the interface(s) defined in this IDD.
Section 4	Requirements Traceability and Qualification Provisions: Defines the requirements traceability to the TCS SSDD, and also defines the qualification methods which are used to ensure that the requirements of this interface have been met.
Section 5	Notes: Provides background information regarding the specific C^4I System addressed; and a list of acronyms and abbreviations used in this IDD.
Appendices	As applicable to provide referenced data

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2. Referenced Documents

2.1 Government Documents

The following documents of the exact issue shown form part of this IDD to the extent specified herein. In the event of conflict between the documents referenced herein and the content of this IDD, the content of this IDD will be considered a superseding requirement.

2.1.1 Specifications

TCS 102 30 June 1997	Tactical Control System, System/Subsystem Specification, Version 1.0
TCS 104 Date - TBD	Tactical Control System, System/Subsystem Design Description, Version 1.0

2.1.2 Standards

Federal

Military

MIL-STD-498 5 Dec. 1994	Software Development and Documentation Standard
MIL-STD-2500A 12 October 1994	National Imagery Transmission Format Standard (NITFS), Version 2.0
MIL-STD-6040 1 January 1997	U.S. Message Text Formatting Program Description of U.S. Message Text Formatting Program
OS-OTG (Rev B) 1 July 1994	Operational Specification for Over the Horizon Targeting GOLD Revision B
CJCSM 6120.05 1 January 1997	Manual for Tactical Command and Control Planning Guidance for Message Text Formats
JIEO Circular 9152 1 January 1997	Repository of USMTF Program Items for U.S. Implementation Guidance

2.1.3 Drawings

None.

2.1.4 Other Publications

Reports

NSWCDD/96-XX 9 Dec. 1996	Operational Concept Document for the TCS (Draft)
JROCM 011-97 Version 5.0 3 February 1997	Operational Requirements Document for UAV TCS

Regulations

Handbooks

CIGSS-HDBK Version 1.0 19 July 1995	CIGSS Acquisition Standards Handbook
MIL-HDBK-1300A 12 October 1994	National Imagery Transmission Format

Bulletins

2.2 Non-Government Documents

The following documents of the exact issue shown form part of this IDD to the extent specified herein. In the event of conflict between the documents referenced herein and the content of this IDD, the content of this IDD will be considered a superseding requirement.

2.2.1 Specifications

None.

2.2.2 Standards

None.

2.2.3 Drawings

None.

2.2.4 Other Publications

None.

3. Interface Design

This IDD focuses on the interfaces between the TCS and the imagery support systems within JMCIS. JMCIS 2.2 or greater is the version that is assumed for the interface with TCS. Several variations of JMCIS exist in the U.S. Navy, with the introduction of JMCIS 3.X/GCCS-M soon approaching. This IDD is written with focus on the functionality and architecture of JMCIS 2.2 as it currently exists.

This document includes descriptions of a TCS interface to JMCIS 3.X. The description of JMCIS 3.X interfaces serve as a bridge from JMCIS 2.2 to the JMCIS 3.X/ GCCS-M system. Alternative methods of affecting a TCS to JMCIS 3.X/GCCS-M may exist including the possibility of hosting the TCS software on the JMCIS 3.X/GCCS-M system. A separate IDD document may be required to address a TCS interface with JMCIS 3.X/GCCS-M.

In cases where a JMCIS 2.2 workstation may be installed on a NTCS-A 2.0 LAN, the JMCIS 2.2 interface will be used.

The primary TCS to JMCIS 2.2/3.X interface is a single, uni-directional connection for transmission and receipt of digital imagery files and messages. A separate one-way interface will connect the TCS to JMCIS for transmission of analog video. See Figure 3.0-1, the TCS-to-JMCIS Interface Diagram, for a graphic representation of the intended interface.

3.1 Interface Identification/Diagram

The interfaces described below are depicted in Figure 3.1-1. These interfaces support imagery/data transfer via three methods: Analog video transfer, Digital still frame imagery transfer, and Mechanical transfer of analog video/digital imagery via magnetic media (4mm tape, 8mm tape, or 3-1/2 in. floppy disk). The ability to send and receive messages is provided for amplification of imagery products and mission coordination.

The TCS will provide payload video, both raw and annotated, and still frame files to be exported/disseminated to JMCIS (Version 2.2) for display and intelligence/imagery processing. The analog video shall be transferred via an RS-170 interface using the National Television Standards Committee (NTSC) format [C4I214001], and shall be implemented with an RG-59/U standard coaxial cable [C4I214002]. The option exists to utilize fiber rather than RG-59/U, with the understanding that the video signal from TCS shall require conversion at the TCS, and conversion back to analog at the point of interface to the JMCIS workstation [C4I214003]. For the purpose of this IDD, the use of RG-59/U is the primary interface. The input will be to the Image Acquisition Module (IAM) of the JMCIS architecture.

A TCS-to-JMCIS hardware interface identification diagram is provided in Figure 3.1-2.

3.2 TCS to JMCIS Interface

3.2.1 Priority of Communications Interface

Priority	**Interface**
1	Digital Imagery (Still NITF 2.0)
2	Tactical Messages
3	Analog Imagery (RS-170/NTSC)

3.2.1.1 TCS Priority Not Applicable.

3.2.1.2 Link Data Priority Not Applicable.

3.2.2 Type of Communications Interface

JMCIS 2.X Configuration

The TCS and JMCIS will communicate through pre-defined message formats. The TCS will communicate via the message processing capabilities of JMCIS, which provides an external communications interface for the transmission of United States Message Text Format (USMTF) and other Navy-unique messages. JMCIS is capable of processing and distributing incoming messages via its Automated Message Handling Service (AMHS) Segment. Automated Message Correlation parses Reconnaissance Exploitation Reports (RECCEXREP), Tactical Reports (TACREPs), Order of Battle Reports (OBREP), and Image Interpretation Reports (IIRs). The interface types are as follows**:**

a. In cases where the systems are connected to a common Wide Area Network (WAN) or LAN infrastructure, they shall communicate via the Simple Mail Transport Protocol (SMTP) capabilities resident on the WAN or LAN [C4I214004]. The TCS and JMCIS shall communicate either via an Ethernet LAN via RJ45 connector (ISO/IEC 802-3: 1996 [ANSI/IEEE Standard 802.3, 1996 Edition]) [C4I214005] or Fiber Optic Digital Data Interface [C4I214006] dependent upon the installed shipboard network. This LAN will provide the medium for transmitting the tactical messages and NITF 2.0 imagery files between the systems.

JMCIS 3.X Configuration

As in the JMCIS 2.X build, JMCIS 3.X provides an external interface for transmission of USMTF and Navy-unique messages. JMCIS is capable of processing and distributing incoming messages via the Profile Server (PROFSV) Segment and will parse all OBREP messages, and key data sets from RECCEXREP, TACREP, and IIRs messages. Data that is parsed is stored in its Integrated Data Base (IDB) and Message Integrated Data Base (MIDB) in tactical data structures.

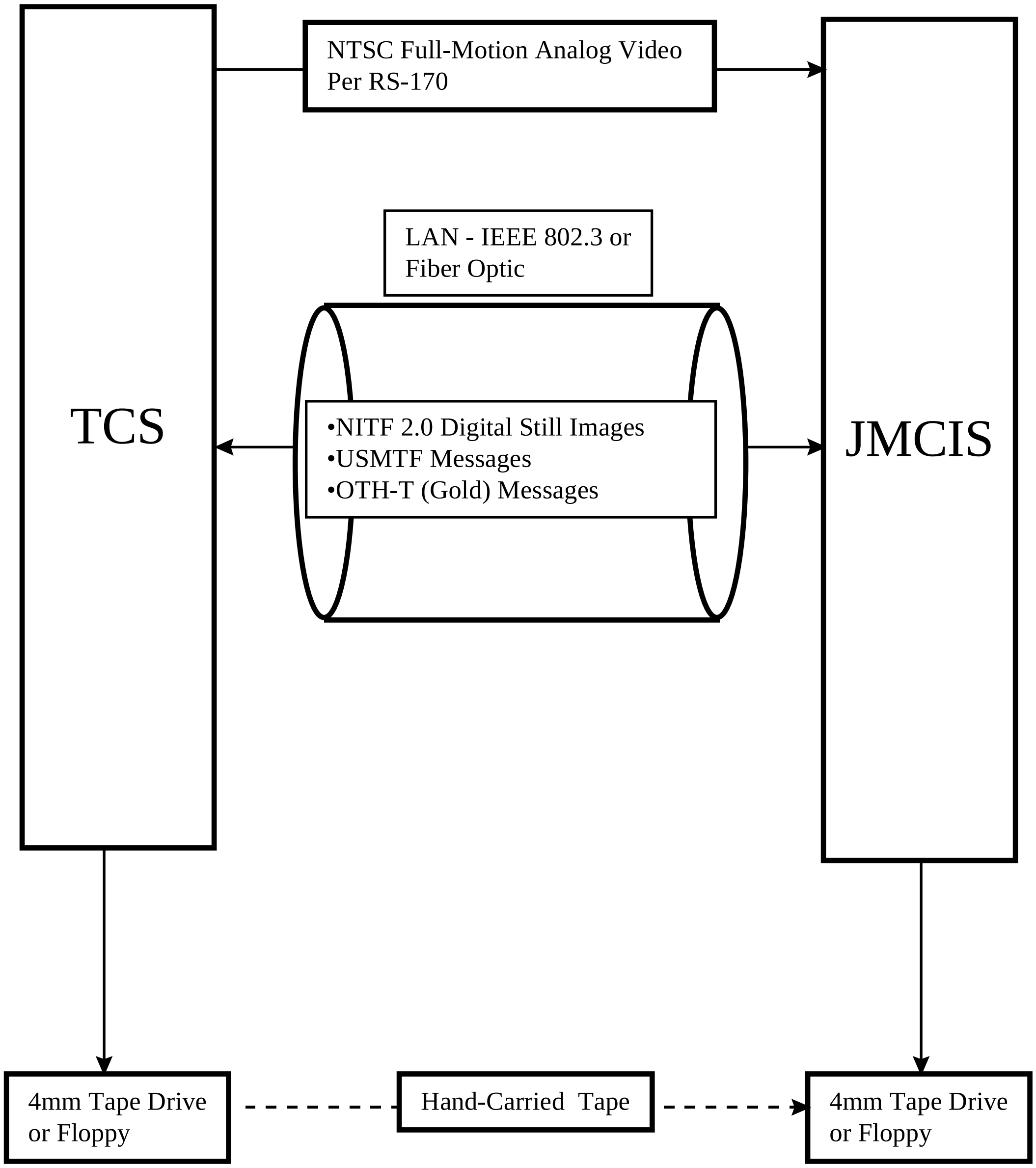
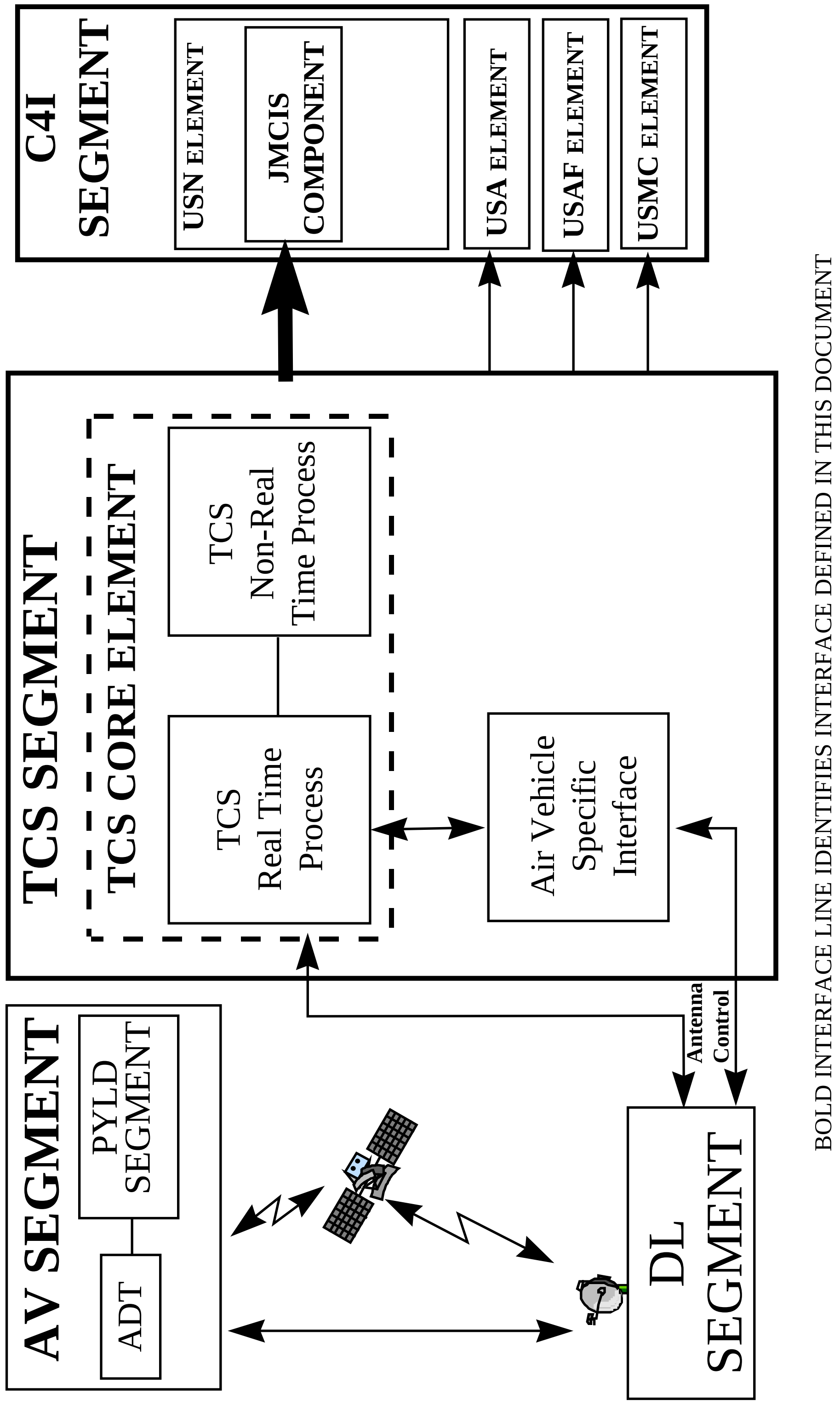

NTSC Full-Motion Analog Video
Per RS-170
LAN - IEEE 802.3 or
Fiber Optic
TCS
•NITF 2.0 Digital Still Images
•USMTF Messages
•OTH-T (Gold) Messages
JMCIS
4mm Tape Drive
or Floppy
Hand-Carried Tape
4mm Tape Drive
or Floppy

Figure 3.0-1 Functional Interface Identification Diagram


C4I SEGMENT
USN ELEMENT
JMCIS COMPONENT
USA ELEMENT
USAF ELEMENT
USMC ELEMENT
TCS SEGMENT
TCS CORE ELEMENT
TCS Non-Real Time Process
TCS Real Time Process
Air Vehicle Specific Interface
AV SEGMENT
PYLD SEGMENT
ADT
Antenna Control
DL SEGMENT

BOLD INTERFACE LINE IDENTIFIES INTERFACE DEFINED IN THIS DOCUMENT

Figure 3.1-1 TCS-to-JMCIS Interface Diagram

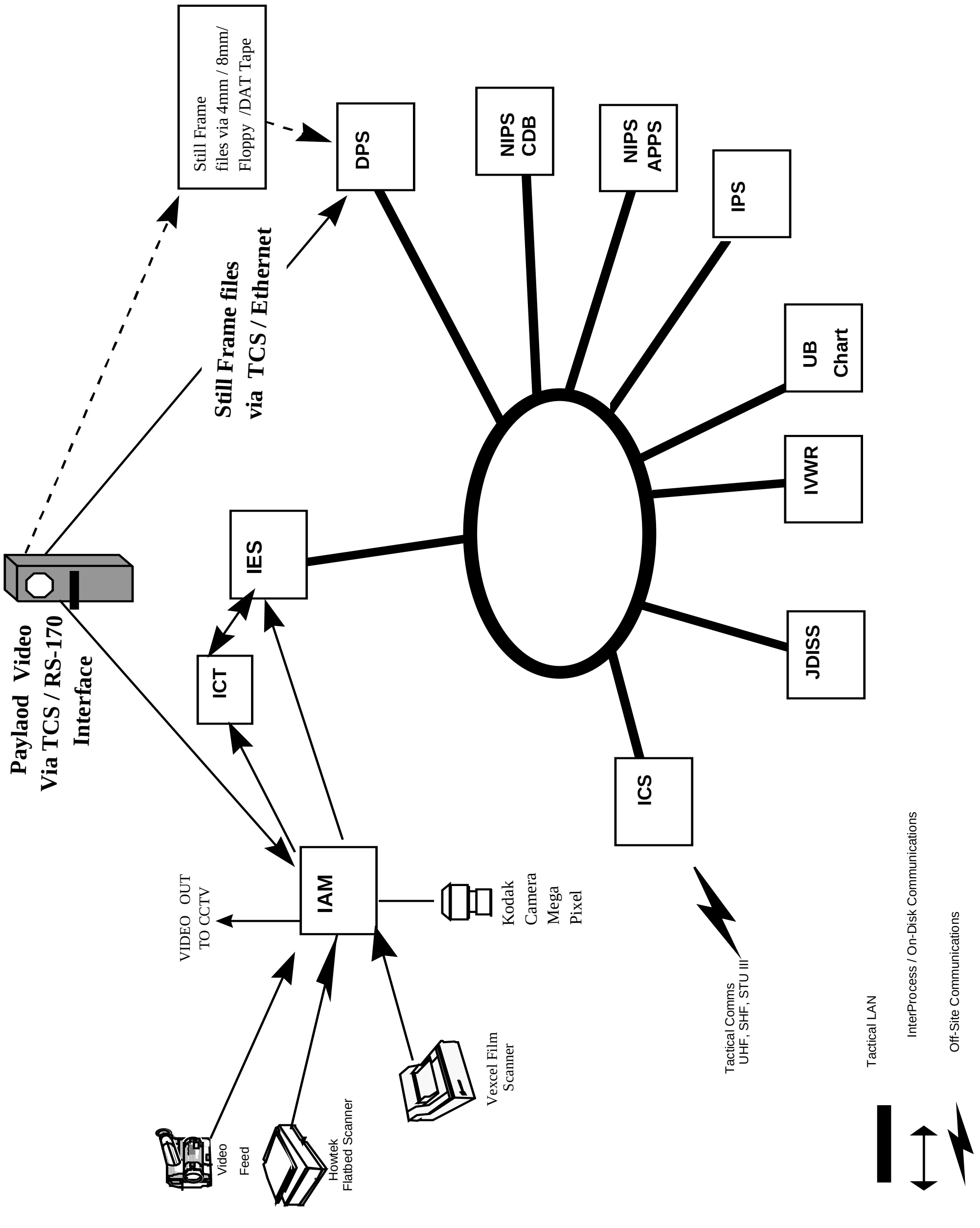

Still Frame files via 4mm / 8mm/ Floppy /DAT Tape
DPS
NIPS CDB
NIPS APPS
IPS
UB Chart
IVWR
JDISS
ICS
IES
ICT
IAM
Still Frame files via TCS / Ethernet
Paylaod Video Via TCS / RS-170 Interface
VIDEO OUT TO CCTV
Kodak Camera Mega Pixel
Video Feed
Howtek Flatbed Scanner
Vexcel Film Scanner
Tactical Comms UHF, SHF, STU III
Tactical LAN
InterProcess / On-Disk Communications
Off-Site Communications

Figure 3.1-2 TCS-to-JMCIS Hardware Interface Identification Diagram

3.2.2.1 Analog Video Interface

The TCS analog video interfaces will be connected to either of two JMCIS configurations. These are the JMCIS 2.2/3.X configuration and the NTCS-A 2.0 configuration.

3.2.2.1.1 JMCIS 2.2 and 3.X Configuration

The TCS-to-JMCIS RG-59/U video cable shall be connected to the frame grabber card used with the JMCIS IAM Segment [C4I214007]. In the JMCIS 2.2 release, this frame grabber card is usually installed in the General Service (GENSER) JMCIS "Joint Operational Tactical System (JOTS)4" TAC-3 or TAC-4 workstation. The option exists to utilize fiber rather than RG-59/U with the understanding that the video signal from TCS will require conversion at the TCS, and conversion back to analog at the point of interface to the JMCIS workstation. For the purpose of this IDD, the use of RG-59/U will be the primary interface. In the JMCIS 3.X release, the video interface shall be via the frame grabber card in a GENSER PC [C4I214008].

The JMCIS IAM Segment will frame grab selected frames and save the frames as NITF 2.0 images on the JMCIS Digital Products Server (DPS). The images then may be annotated and exploited as desired.

Once the TCS images and/or video clips are catalogued on the GENSER JMCIS DPS, they are available for viewing on any other GENSER JMCIS workstation on the ship.

The images are also accessible to the JMCIS JDISS Segment for off-ship dissemination.

The TCS shall have the capability to store analog video on a VHS/Hi-8 tape [C4I214009] for transfer to the SCI JMCIS DPS as needed.

3.2.2.1.2 NTCS-A 2.0 Configuration

On CV/CVN-class ships that have NTCS-A 2.0, a stand-alone JMCIS 2.2 imagery workstation is usually installed to provide imagery capabilities (e.g., digitizing using a Vexcel scanner). This stand-alone JMCIS 2.2 workstation is normally connected to the existing GENSER NTCS-A 2.0 LAN. It is configured as a DPS and is loaded with all of the JMCIS 2.2 imagery segments. In these cases, the interface would work as described in 3.2.2.1.1.

3.2.2.2 LAN Interface

When provided, the TCS will be capable of operating as a member of the JMCIS platform's IEEE 802.3 LAN within the parameters defined by the platform LAN manager. The TCS TCP/IP addresses will be as assigned by the platform LAN manager.

When provided, the TCS will be capable of operating as a member of the JMCIS platform's fiber optic LAN within the parameters defined by the platform LAN manager. The TCS LAN addresses will be as assigned by the platform LAN manager.

3.2.2.3 SMTP Electronic Mail Interface

The TCS shall be capable of exchanging electronic mail (e-mail) messages with the JMCIS using SMTP [C4I214010]. These messages will be transported via the LAN connecting the systems.

The TCS e-mail addresses will be as assigned by the LAN manager on the JMCIS platform.

The TCS shall provide an external interface Application Program Interface (API) for USMTF messages as described in references MIL-STD-6040, OS-OTG (Rev B), CJCSM 6120.05, and JIEO Circular 9152 [C4I214011]. (Refer to Section 3.2.4 of this IDD for a list of these specific messages and a brief description.)

JMCIS will "poll" a specified directory established on the TCS for outgoing tactical messages. Once messages are received into the Automated Message Handling Segment they are parsed based on the message identifier and distributed throughout the JMCIS system. These messages may in turn be forwarded to the Navy Modular Automated Communications System (NAVMACS) II communications processor for processing, storage, distribution, and transmission of internal and external messages. The NAVMACS II provides interfaces to multiple external systems of the Naval Telecommunications System (NTS), including land-lines and radio frequency common devices.

3.2.2.4 Network File System Interface

The TCS shall be capable of exchanging electronic text and imagery files with the JMCIS via a Network File System (NFS) directory resident in TCS [C4I214012], and shared by TCS and JMCIS. TCS will place digital still images in the shared directory, which can then be retrieved by JMCIS. NFS connectivity will be via the LAN connecting the systems.

3.2.2.5 Digital Still Imagery Interface

TCS digital still imagery shall be provided in the NITF 2.0 format to the JMCIS via a NFS shared directory resident in the TCS [C4I214013]. JMCIS will access the shared directory via the IEEE 802.3 or fiber optic LAN. Dependent upon the particular platform upon which TCS is installed, either of two JMCIS configurations will access these images. These configurations are the JMCIS 2.2/3.X configuration and the NTCS-A 2.0 configuration.

3.2.2.5.1 JMCIS 2.2 and 3.X Configuration

The TCS will be connected to the GENSER JMCIS LAN via Ethernet or Fiber Distributed Data Interface (FDDI) to allow network file transfers between the TCS and the JMCIS DPS.

Note: The NITF 2.0 files will have the Basic Encyclopedia (BE) number (if applicable) of the image listed in the Target ID field of the image sub-header. This will enable the image to automatically be “linked” to the corresponding IDB record on JMCIS when it is catalogued in the DPS.

The JMCIS Automated Image Import Module (AIIM) Segment will be used to automatically check the designated directory on the TCS at specified intervals (i.e., every 10 minutes) for imagery, pull the image files across the LAN, and catalog the image files in the JMCIS DPS.

If the LAN connection is down, the files may be transferred to 4 mm tape on the TCS. The image files may then be imported from the 4 mm tape into the JMCIS DPS using the JMCIS Universal Data Import and Export (UDIE) Segment.

Once the TCS images are catalogued on the GENSER JMCIS DPS, they are available for viewing on any other GENSER JMCIS workstation on the ship.

The images are also accessible to the JMCIS JDISS Segment for off-ship dissemination.

The TCS shall also have the capability to store the digital images on 4mm tape [C4I214014], 8mm tape [C4I214015], and floppy disk [C4I214016] for transfer to the SCI JMCIS DPS as needed.

3.2.2.5.2 NTCS-A 2.0 Configuration

On CV/CVN class ships that have NTCS-A 2.0, a stand-alone JMCIS 2.2 imagery workstation is usually installed to provide imagery capabilities (e.g. digitizing using a Vexcel scanner). This stand-alone JMCIS 2.2 workstation is normally connected to the existing NTCS-A 2.0 LAN. It is configured as a DPS and has all of the JMCIS 2.2 imagery segments loaded on it. In these cases, the hardware interface and data flow described above for JMCIS 2.2 may be used.

3.2.3 Individual Data Element Characteristics

The main text of each Character-Oriented Message (COM) begins with the Initial Main Text Sets (IMTS) specified for that message. The IMTS provide essential common information that permits the message to be properly identified, handled, and processed. The IMTS are:

1. EXER or OPER
2. MSGID
3. REF (when appropriate)
4. AMPN (when appropriate)
5. NARR (when appropriate)

3.2.4 Data Element Assembly Characteristics

The IMTS provides the basic framework which permits messages to be properly identified, handled, and processed. The Automated Message Handling Segment of JMCIS is capable of processing messages which utilize the IMTS framework such as USMTF and Over the Horizon Targeting (OTH-T) GOLD messages. Each USMTF and OTH-T GOLD message will specify those sets that are applicable to, and will form a part of, that specific message.

The USMTF messages specified in Table 3.2.4-1 shall be implemented for tactical communication between JMCIS and TCS, and include:

1. C100/IIR [C4I214017]
2. C101/RECCEXREP [C4I214018]
3. C103/OBREP [C4I214019]
4. C111/TACREP [C4I214020]
5. C325/LOCATOR [C4I214021]

Table 3.2.4-1 JMCIS (Afloat) USMTF Message Formats

Msg. No.	Identifier	Name	Function	TCS Capability
C100	IIR	Image Interpretation Report	To provide, in text format, a description and analysis of imagery.	Transmit
C101	RECCEXREP	Reconnaissance Exploitation Report	To provide an abbreviated IIR format for tactical reporting.	Transmit
C103	OBREP	Order of Battle Report	The OBREP is used to provide the latest order of battle information.	Transmit
C111	TACREP	Tactical Report	To provide perishable information of tactical significance, provided for the immediate attention of the tactical commander.	Transmit
C325	LOCATOR (formerly MARREP)	Maritime Force Locator	Used to report surface, subsurface, air or special interest units operating in the maritime environment.	Transmit

In addition to the USMTF message formats, the OTH-T GOLD message format is provided for transmitting selected data between JMCIS compatible OTH-T systems. The GOLD format is the primary message format for Tactical Data Processor (TDP) to TDP information exchange via the Officer in Tactical Command Information Exchange System (OTCIXS) and the Tactical Data Information Exchange System (TADIXS). The OTH-T GOLD message types specified in Table 3.2.4.-2 shall be implemented for tactical communication between JMCIS and TCS, and include:

1. GOLD - OPNOTE [C4I214022]

Table 3.2.4-2 JMCIS OTH-T (GOLD) Message Formats

Msg. No.	Identifier	Name	Function	TCS Capability
NA	GOLD	OPNOTE	The operator to operator OPNOTEs are used to exchange operator information (e.g., to manually resolve ambiguities between computer data bases).	Transmit & Receive

The table in Appendix A, Mandatory Data Elements, describes the mandatory SET IDs and the respective mandatory data elements per message for both USMTF and OTH-T GOLD messages. See Appendix B, Message Test Formats, for description of each message listed in Tables 3.2.4-1 and 3.2.4-2.

3.2.5 Communication Methods Characteristics

The TCS and JMCIS communicate via an Ethernet LAN (ISO/IEC 8802-3: 1996 [ANSI/IEEE Standard 802.3, 1996 Edition]) or Fiber Digital Distribution Interface. This LAN will provide the medium for transmitting and receiving text messages and NITF 2.0 imagery files between TCS and JMCIS. The TCS and JMCIS will be interconnected via an Ethernet mini-hub using RJ45 connectors or via FDDI depending on the shipboard configuration.

a. Analog Video Transfer - An RG-59/U video cable will be connected between the TCS and the frame grabber card used with the JMCIS IAM Segment. In the JMCIS 2.2 release, this frame grabber card is usually installed in the GENSER JMCIS "JOTS4" TAC-3 or TAC-4 workstation. The TCS will output a composite NTSC video signal to the frame grabber used with the JMCIS IAM Segment. The JMCIS IAM Segment will be used to frame grab selected frames, and save the frames as NITF 2.0 images on the JMCIS DPS. The images will then be annotated and exploited as desired.

b. Digital Imagery - The TCS will create NITF 2.0 image files and save them to a designated directory on the TCS.

   The JMCIS AIIM Segment will be used to automatically check the designated directory on the TCS at specified intervals (i.e., every 10 minutes) for imagery, pull the image files across the LAN, and catalog the image files in the JMCIS DPS.

   In the event that the LAN connection is down, the files will be transferred to 4mm tape on the TCS. The image files could then be imported from the 4mm tape into the JMCIS DPS using the JMCIS UDIE Segment.

   Once the TCS images are catalogued on the GENSER JMCIS DPS, they are available for viewing on any other GENSER JMCIS workstation on the ship. The images are also accessible to the JMCIS JDISS Segment for off-ship dissemination. The images can also be transferred via 4mm tape, 8mm tape, or floppy disk to the SCI JMCIS DPS as needed.

c. Text Messages - Within the JMCIS (Afloat) variant AMHS Segment is interfaced to the JMCIS Communications (COMMS Server) and Message Processing Server. This interface allows for the required processing, including parsing and decoding/encoding, to manage input and output ASCII/BAUDOT and binary messages. Inputs may be received from various sources using serial connections, including RS-232 and MIL-188C, and various parallel connections. In the specific case of TCS, the RS-232 interface via a hub on the JMCIS LAN. Access to external communication systems is via an interface between the JMCIS Communications and message processing servers and NAVMACS II.

3.2.6 Protocol Characteristics

JMCIS applications are built upon the X-Window environment within UNIX. X-Windows controls the displays of engineering workstations and provides a standard environment for application software. It has three essential components: servers, clients, and the X-Window Protocol. The X-Window protocol is used to communicate between servers and clients. In JMCIS variants, this protocol uses Transmission Control Protocol/Internet Protocol (TCP/IP) to provide basic communications services between the client and the server. TCS is considered a client in the JMCIS X-Windows environment.

3.2.7 Other Characteristics Not Applicable

4. Requirements Traceability and Qualification Provisions

This section defines the traceability of each C4I requirement in this IDD to the TCS SSDD Version 1.0, and also defines the qualification methods to be used to ensure that each requirement of this interface has been met.

The qualification methods are defined as:

D	Demonstration	The operation of the interfacing entities that relies on observable functional operation not requiring the use of instrumentation, special test equipment or subsequent analysis.
T	Test	The operation of the interfacing entities using instrumentation or special test equipment to collect data for later analysis.
A	Analysis	The processing of accumulated data obtained from other qualification methods. Examples are reduction, interpretation, or extrapolation of test results.
I	Inspection	The visual examination of code, documentation, etc.
S	Special	Any special qualification methods such as special tools, techniques, procedures, facilities, and acceptance limits.

Table 4.0-1 lists each requirement of the TCS-to-JMCIS interface with its requirement number, qualification method, traceability to the SSDD, and the IDD paragraph number where this requirement is found.

Table 4.0-1 Requirements Traceability and Qualification Methods

IDD Requirement #	Requirement	IDD Paragraph #	SSDD Requirement(s)	Qualification Method(s)
C4I214001	Analog Video via RS-170 interface using the NTSC format	3.1	TBD	D, I
C4I214002	Analog Video via RG-59/U standard coaxial cable	3.1	TBD	D, I
C4I214003	Conversion to Fiber Optics for NTSC analog video	3.1	TBD	D, I
C4I214004	Communications via SMTP protocol on the WAN/LAN	3.2.2	TBD	D, I

IDD Requirement #	Requirement	IDD Paragraph #	SSDD Requirement(s)	Qualification Method(s)
C4I214005	TCS and JMCIS via an Ethernet LAN (ISO/IEC 802-3: 1996 [ANSI/IEEE Std 802.3, 1996 Edition]) via RJ45 connector	3.2.2	TBD	D, I
C4I214006	TCS and JMCIS via Fiber Optic Digital Data Interface	3.2.2	TBD	D, I
C4I214007	RG-59/U cable connected to frame grabber Card	3.2.2.1.1	TBD	D, I
C4I214008	Video interface via frame grabber card in GENSER PC for JMCIS 3.X.	3.2.2.1.1	TBD	D. I
C4I214009	Store analog video on VHS/Hi-8 tape for transfer to SCI JMCIS DPS.	3.2.2.1.1	TBD	D, I
C4I214010	TCS/JMCIS e-mail messages transported via LAN using SMTP.	3.2.2.3	TBD	D, I
C4I214011	TCS shall provide external interface API for USMTF messages.	3.2.2.3	TBD	D, I
C4I214012	TCS to exchange electronic text/imagery files with JMCIS via NFS directory resident in TCS (shared by TCS/JMCIS).	3.2.2.4	TBD	D, I
C4I214013	TCS digital still imagery provided in NITF 2.0 format to JMCIS via NFS shared directory resident in TCS.	3.2.2.5	TBD	D, I
C4I214014	TCS shall store digital images on 4mm tape for transfer to SCI JMCIS DPS.	3.2.2.5.1	TBD	D, I
C4I214015	TCS shall store digital images on 8mm tape for transfer to SCI JMCIS DPS.	3.2.2.5.1	TBD	D, I
C4I214016	TCS shall store digital images on floppy disk for transfer to SCI JMCIS DPS.	3.2.2.5.1	TBD	D, I

IDD Requirement #	Requirement	IDD Paragraph #	SSDD Requirement(s)	Qualification Method(s)
C4I214017	USMTF message for tactical JMCIS/TCS communication: C100/IIR.	3.2.4	TBD	D, I
C4I214018	USMTF message for tactical JMCIS/TCS communication: C101/RECCEXREP.	3.2.4	TBD	D, I
C4I214019	USMTF message for tactical JMCIS/TCS communication: C103/OBREP.	3.2.4	TBD	D, I
C4I214020	USMTF message for tactical JMCIS/TCS communication: C111/TACREP.	3.2.4	TBD	D, I
C4I214021	USMTF message for tactical JMCIS/TCS communication: C325/LOCATOR.	3.2.4	TBD	D, I
C4I214022	Tactical JMCIS/TCS communication via: GOLD - OPNOTE	3.2.4	TBD	D, I

5. Notes

5.1 Background Information

The JMCIS is one of several Navy C^4I systems that will be provided payload video and NITF2.0 files from TCS. With origins in the JOTS, Operational Support System, and the Navy Tactical Command System-Afloat (NTCS-A), JMCIS incorporates the functionality of these systems with additional capabilities in a Commercial Off-The-Shelf/Government Off-The-Shelf (COTS/GOTS)-based system built around a “core” JMCIS software known as the “Unified Build (UB).” The difference between variants are primarily due to the tailoring software segments for the specific purposes. The JMCIS variants are: Ashore Variant (Operational Support System (OSS)), Tactical Variant (Tactical Support Center (TSC)), Afloat Variant (NTCS-A).

JMCIS represents a Command Information System which is distributed across a LAN of workstations. An operator is able to access required functionality from any workstation, regardless of where the actual processing takes place on the LAN. Through interfaces the operator may transmit, receive, and access data from various Navy-specific or Joint sources and systems. Applications exist for supporting intelligence, tactical planning and decision making, cryptologic support, imagery, meteorology/oceanography, communications, undersea (surveillance), briefing support, logistics, training, NATO support, ocean surveillance and data base management.

This IDD focuses on the interfaces between the TCS and the imagery support systems within JMCIS. JMCIS 2.2 or greater is the version of the system that is being assumed for the interface with TCS. This IDD is written with focus on the functionality and architecture of JMCIS 2.2 as it currently exists. Figure 5.1-1, JMCIS Imagery Architecture, provides the basic architecture of JMCIS 2.2 as it currently exists. Table 5.1-1, JMCIS Imagery Import/Export Capabilities, identifies the various media/formats that the system currently supports.

Table 5.1-1 JMCIS Imagery Import/Export Capabilities

Imagery Import	Imagery Export
• Analog Video • VCR, CCTV, UAV	• Analog Video • VCR, CCTV
8mm Exabyte Tape	8mm Exabyte Tape
4mm DAT Tape	4mm DAT Tape
DOS & UNIX 3 ½ inch floppy	DOS & UNIX 3 ½ floppy
LAN	LAN
File System	File System
• Communications • SHF, UHF, STU-III	• Communications • SHF, UHF, STU-III
Vexcel Scanner	• Hardcopy/Printers • Kodak XL series • Seiko • Laser Jet IV
Howtek Scanner	
PIES Digital Camera	
CD ROM	

The three components of the JMCIS imagery applications architecture that directly apply to the interface with the TCS are the Image Exploitation Services (IES), IAM, and Imagery Composition Tool (ICT). The IES provides the image exploitation capabilities to the system. The primary functions of the IES are the following:

- Image Manipulation (zoom, magnify, rotate, etc.)
- Image Enhancement (filtering, histogram adjustment)
- Image Mensuration (range & bearing, traverse, height, area, volume, offset)
- Image Registration
- Overlay of Database Threat Information on Registered Images.

The IAM provides the capability to acquire images from various video sources, video cameras, digital cameras, and scanners. IAM also provides an output of composite video signal to other systems (i.e., CCTV). IAM sources are as follows:

- Kodak MegaPixel Digital Camera
- Howtek Flatbed Scanner
- Vexcel Scanner
- Any NTSC Composite Video Source (VCR, UAV, etc.).

The ICT provides the capability to annotate and compose complex image products, and to edit NITF imagery prior to display, printing, and dissemination. It allows an image to be annotated with text and graphics, allows multiple images to be overlaid on one another, and allows texts reports to be attached to an image.

The features of the ICT include:

- Assemble Various Sizes and Resolution of NITF 2.0 Image Products
- Load Images from DPS, IAM, or File System
- Annotate Imagery with Text, Symbols, and Graphics
- Move Images and Annotations on the Image Window
- Attach Sub-Images and Annotations together.

The IES Segment provides the imagery analyst with advanced imagery exploitation tools, such as image analysis and manipulation, image enhancement, image mensuration, image registration, image to the Central Database System (CDBS) linking a creation of imagery products. The IES application provides the ability to display and process any size image up to NITF compliance Level 6.

Some of the other segments of the JMCIS which support imagery applications which are shown in Figure 5.1-1 are the DPS Segment, Image Print Services (IPS) Segment, Image Manager (IMGR) Segment, Image Viewer (IVWR) Segment, Image Communication Services (ICS) Segment, and the UDIE Segment. A brief description of the function of each of these segments is in Table 5.1-2:

Table 5.1-2 JMCIS 2.2X/3.X Segment Descriptions

Segment Name	Segment Description
DPS Segment	Provides cataloging and retrieval of digital imagery products and related data. The DPS is a client/server based-system which is split into three segments: DPS Client, DPS-Server Segment (DPSSVR), and DPS Applications (DPSAPP). The DPS Client provides an interface for data entry, catalog query/ selection and data retrieval. The DPSSVR provides the Naval Intelligence Processing Services (NIPS) Central Database System (CDBS) with tactical information about the imagery stored on the DPS.
Image Print Services (IPS) Segment	Provides an image print capability to JMCIS users and provides a standard interface for accessing the various imagery printers.
Image Manager (IMGR) Segment	Provides the tools to graphically query for images, plot image footprints on CHART and prepare images for use by the CHART image-draw module. CHART is an application that coordinates and performs graphic mapping activities including: maps, charts, overlays, track planning, formation planning overlays, geographic boundaries, gridlines, roads, rivers ,and bottom contours.

Segment Name	**Segment Description**
Image Viewer (IVWR) Segment	Provides the imagery user with a “view only” capability for displaying imagery stored by DPS.
Image Communication Services (ICS) Segment	Provides the JMCIS imagery user with the tools to receive and disseminate digital imagery and related products through available tactical and strategic communication channels.
Universal Data Import/Export (UDIE) Segment	Provides a user interface for importing and exporting imagery files of various formats to and from the DPS.

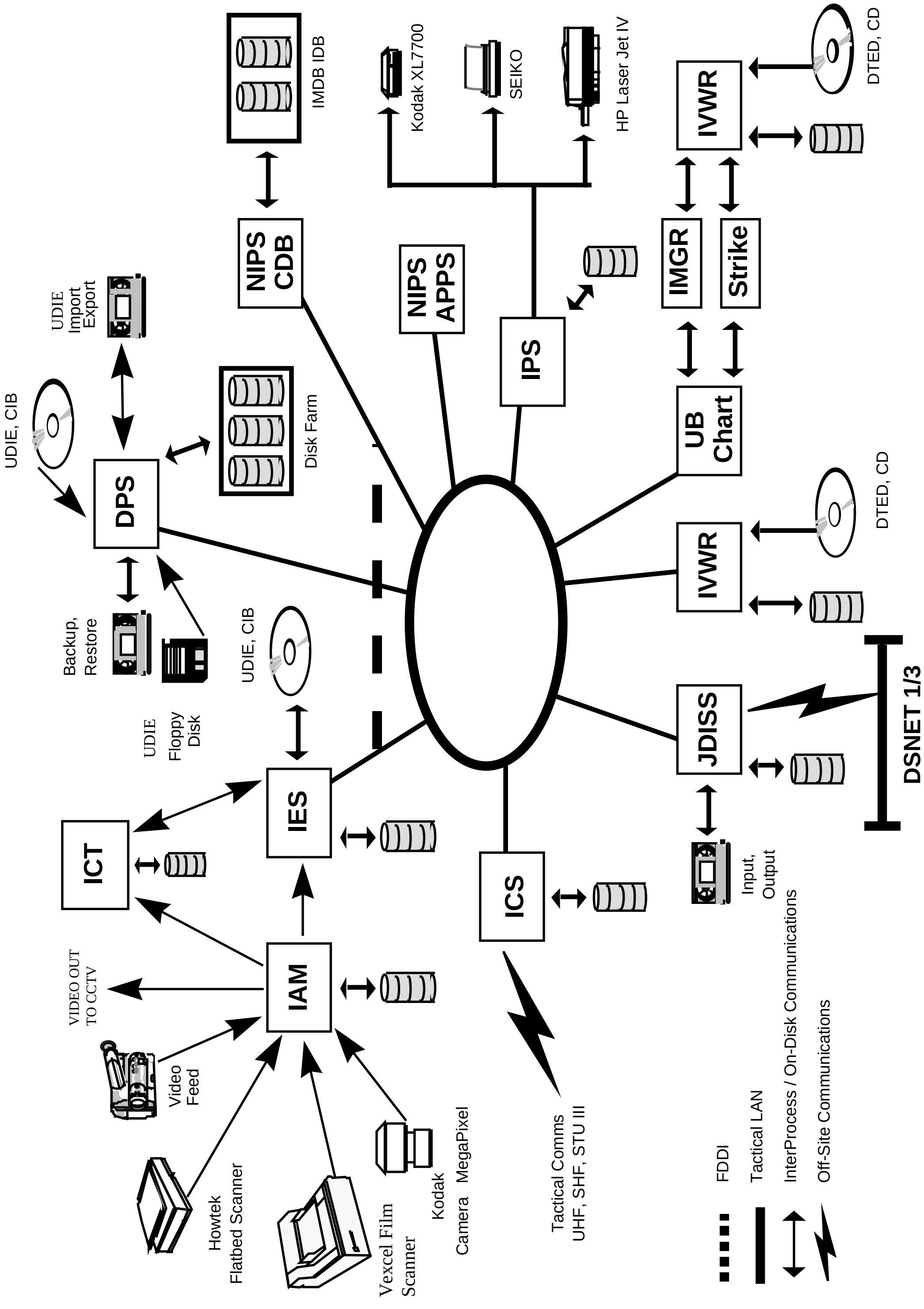

UDIE, CIB
UDIE Import Export
DPS
Disk Farm
Backup, Restore
UDIE Floppy Disk
UDIE, CIB
NIPS CDB
IMDB IDB
NIPS APPS
Kodak XL7700
SEIKO
HP Laser Jet IV
IPS
IMGR
Strike
IVWR
DTED, CD
UB Chart
IVWR
DTED, CD
JDISS
DSNET 1/3
Input, Output
ICT
IES
IAM
ICS
VIDEO OUT TO CCTV
Video Feed
Howtek Flatbed Scanner
Vexcel Film Scanner
Kodak Camera MegaPixel
Tactical Comms UHF, SHF, STU III
FDDI
Tactical LAN
InterProcess / On-Disk Communications
Off-Site Communications

Figure 5.1-1 JMCIS Imagery Architecture

5.2 Acronyms and Abbreviations.

ACS	Aerial Common Sensor
ADT	Air Datalink Terminal
AFATDS	Advanced Field Artillery Tactical Data System
AFMSS	Air Force Mission Support System
AIIM	Automated Image Import Module
AMHS	Automated Message Handling Service
AMPS	Army Mission Planning System
API	Application Program Interface
ASAS	All Source Analysis System
ATHS	Automated Target Hand-off System
ATWCS	Advance Tomahawk Weapons Control System
AV	Air Vehicle
BE	Basic Encyclopedia
C^{4}I	Command, Control, Communication, Computers and Intelligence
CARS	Contingency Airborne Reconnaissance System
CGS	Common Ground Station
CCTV	Closed Circuit Television
CDBS	Central Database System
CIGSS	Common Imagery Ground/Surface System
COM	Character-Oriented Message
COMPASS	Common Operational Modeling, Planning, and Simulation Strategy
COSIP	Computer Open Systems Interface Processor
COTS	Commercial Off-The-Shelf
DCGS	Distributed Common Ground Station
DID	Data Item Description
DII/COE	Defense Information Infrastructure/Common Operating Environment
DL	Data Link
DoD	Department of Defense
DoDI	Department of Defense Instruction
DPS	Digital Products Server
DPSAPP	Digital Products Server Applications
DPSSVR	Digital Products Server-Server Segment
ETRAC	Enhanced Tactical Radar Correlator
FDDI	Fiber Distributed Data Interface
GCS	Guardrail Common Sensor
GDT	Ground Datalink Terminal
GENSER	General Service

GOTS	Government Off-The-Shelf
GSM	Ground Station Module
HAE	High Altitude Endurance
HCI	Human-Computer Interface
HDBK	Handbook
IAM	Image Acquisition Module
IAS	Intelligence Analysis System
ICS	Image Communication Service
ICT	Imagery Composition Tool
IES	Image Exploitation Services
IDB	Integrated Data Base
IDD	Interface Design Description
IIR	Image Interpretation Report
IMGR	Image Manager
IMTS	Initial Main Text Sets
IP	Internet Protocol
IPF	Integrated Processing Facility
IPS	Image Print Services
IRS	Interface Requirements Specification
IVWR	Image Viewer
JDISS	Joint Deployable Intelligence Support System
JII	Joint Interoperability Interface
JMCIS	Joint Maritime Command Information System
JMF	Joint Message Format
JMUS	Joint Multiple UAV Systems
JOTS	Joint Operational Tactical System
JSIPS	Joint Service Imagery Processing System-Air Force
JSIPS-N	Joint Service Imagery Processing System-Navy
JSTARS	Joint Surveillance Target Attack Radar System
JTA	Joint Technical Architecture
LAN	Local Area Network
LRIP	Low Rate Initial Production
MAE	Medium Altitude Endurance
MARREP	Maritime force Locator
MIDB	Message Integrated Data Base
MIES	Modernized Imagery Exploitation System
NATO	North Atlantic Treaty Organization
NAVMAC	Navy Modular Automated Communications System
NFS	Network File System

NIIRS	National Imagery Interpretation Rating Scale
NIPS CDB	Naval Intelligence Processing Services Common Data Base
NITF	National Imagery Transmission Format
NITFS	National Imagery Transmission Format Standard
NTCS-A	Navy Tactical Command System-Afloat
NTS	Naval Telecommunications System
NTSC	National Television Standards Committee
OB	Order of Battle
OBREP	Order of Battle Report
ORD	Operational Requirements Document
OSS	Operational Support System
OTCIXS	Officer In Tactical Command Information Exchange System
OTH-T	Over The Horizon-Targeting
PYLD	Payload
PROFSV	Profile Server
RECCEXREP	Reconnaissance Exploitation Report
SMTP	Simple Mail Transport Protocol
SPIRIT	Special Purpose Integrated Remote Intelligence Terminal
SRD	Systems Requirements Document
SSDD	System/Subsystem Design Description
SSS	System/Subsystem Specification
TACREP	Tactical Report
TADIXS	Tactical Data Information Exchange System
TAMPS	Tactical Aircraft Mission Planning System
TBMCS	Theater Battle Management Core System
TCP	Transmission Control Protocol
TCS	Tactical Control System
TDP	Tactical Data Processor
TEG	Tactical Exploitation Group
TES	Tactical Exploitation System
TSC	Tactical Support Center
TUAV	Tactical Unmanned Aerial Vehicle
UAV	Unmanned Aerial Vehicle
UAV JPO	Unmanned Aerial Vehicle Joint Program Office
UB	Unified Build
UDIE	Universal Data Import and Export
USMTF	United States Message Text Format
VMF	Variable Message Format

WAN	Wide Area Network

APPENDIX A
Mandatory Data Elements

MSG No.	Msg Name	Mandatory Set ID.	Field No.	Mandatory Data Element	Structure
ALL	ALL	MSGID	1	Message Text Format Identifier (In OTH-T GOLD OPNOTE and CONTACT messages are both identified with entry of “GOLD” in Field #2 of MSGID.)	1-20X

MSG No.	**Msg Name**	**Mandatory Set ID.**	**Field No.**	**Mandatory Data Element**	**Structure**
C100	IIR	RPTID	1	Report Indicator	4- 5 A
			2	Reporting Org.	2- 6 AN
			3	Report Serial No.	6 AN
			6	Imagery Mission Date	6 N
		ITEMTYP	1	Item Type	9-32 AB
		ITEM	1	Item Number	3 N
			2	Target Name	1-38 X
			3	Basic Encyclopedia Number	10 ANS
			6	Country of Sighting/ Event	2 A
			7	National Tasking Indicator	1 A
		STATACT	1	Target/Activity Operational	3 A
		OBID	1	Type of Order of Battle (OB)	3 A
			2	Date of Coverage for OB	6 N
			3	Time on Target Including Zone Tot	5 AN
		IMR	1	Date Of Coverage Dte	6 N
			3	Imagery Mission Number	7 X
			4	Msn Imagery Type	2 AN
			5	Sensor Position	4 AN
			6	Image Number	1-14 ANS
			10	Time on Target Including Zone I Tot	5 AN

MSG No.	Msg Name	Mandatory Set ID.	Field No.	Mandatory Data Element	Structure
		IMDATA	1	Coverage Extent and Mode	1 A
			2	Nat'l Imagery Interpretation Rating Scale (NIIRS)	2 N
			3	Major Weather Condition	2 A
		ITEM	1	Item Number	3 N
			2	Target Name	1-38 X
			3	Basic Encyclopedia Number	10 ANS
			6	Country of Sighting/Event	2 A
			7	National Tasking Indicator	1 A
		IMR	1	Date of Coverage Dte	6 N
			3	Imagery Mission Number Msn	7 X
			4	Imagery Type	2 AN
			5	Sensor Position	4 AN
			6	Image Number	1-14 ANS
			10	Time on Target Including Zone I Tot	5 AN

MSG No.	**Msg Name**	**Mandatory Set ID.**	**Field No.**	**Mandatory Data Element**	**Structure**
		IMDATA	1	Coverage Extent and Mode	1 A
			2	Nat'l Imagery Interpretation Rating Scale (NIIRS)	2 N
			3	Major Weather Condition	2 A
		ITEM	1	Item Number	3 N
			2	Target Name	1-38 X
			3	Basic Encyclopedia Number	10 ANS
			6	Country of Sighting/Event	2 A
			7	National Tasking Indicator	1 A

MSG No.	**Msg Name**	**Mandatory Set ID.**	**Field No.**	**Mandatory Data Element**	**Structure**
C101	RECCEXREP	MISSNID	1	Mission Type	2-6 AN
			2	Agency	1-30 X
		ITEM	1	Item Number	3 N
			2	Target Name	1-38 C
			3	- Basic Encyclopedia #	10 ANS
				- Area Target Identifier	6AN
				- Field-initiated basic encyclopedia #	10AN
				- BE # (suspect installation)	10AN
			6	Country of Sighting	2 A
			7	National Tasking Indicator	1 A
		TOT	1	On Target Day - Time	7 AN
		NARR	1	Free Text	UND X

MSG No.	Msg Name	Mandatory Set ID.	Field No.	Mandatory Data Element	Structure
C103	OBREP	ITEMOB	1	Item Number Target	3 N
			2	Name	1-38 ANBS
		OBLOC	1	Date - Time Group	12 AN
		OBEQUIP	1	Order of Battle (OB) Count	4 N
			2	Validity Description	4 A
			3	OB Equipment Name	1-30 ANBS
		OBLOC	1	Date - Time Group	12 AN
		EMTAVG	1	ELINT Notation	5 AN
			2	Date - Time Group	12 AN

MSG No.	**Msg Name**	**Mandatory Set ID.**	**Field No.**	**Mandatory Data Element**	**Structure**
C111	TACREP	MSGID is only mandatory set I.D.	1	Message Text Format Identifier (In OTH-T GOLD OPNOTE and CONTACT messages are both identified with entry of “GOLD” in Field #2 of MSGID.)	1-20X

MSG No.	Msg Name	Mandatory Set ID.	Field No.	Mandatory Data Element	Structure
C325	LOCATOR	HEADING	1	Heading Information	1-61 ANBS
		SUB	1	Contact Serial Number	1-3 N
			2	Unit Designation	1/30 ANBS
			3	Locating Report Number	3/4 AN
			4	Classification and/or Confidence Level	4-6 AN
			5	Nationality	2 A
			6	Submarine Propulsion Type	3 A
		FORCODE	1	Force Threat Designator	2 N
		ATTACK	1	Ordnance/Weapon Type, Maritime Unique	3-13 ANBS
			2	Attack Results	3-12 A
		TMPOS	1	Day - Time	7/8 AN
			2	Target Location	11/14 ANS
			3	Contact Course, True	4 AN
			4	Speed of Contact or Target in Knots	4-7 ANS
			5	Mission Event	4-7 AS
			6	Sensor Platform	3-4 A
			7	Sensor Code	2-6 AN
		EMITTER	1	Emitter Designation	1-15 ANBS
			2	Credibility	3-4 A
			3	ELINT Notation or Sorting Code	4/5 AN

MSG No.	Msg Name	Mandatory Set ID.	Field No.	Mandatory Data Element	Structure
		SIGNA	1	Acoustic Source	1-15 ANBS
			2	Acoustic Frequency, Nearest One Thousandth Hertz	7-10 ANS
			3	Harmonic	1-22 NS
			5	Turns Per Knot	8 AN
			6	Verified Day - Time	3 A
		NAVAL	1	Contact Serial #	1-3 N
			2	Unit Designation	1-30 ANBS
			3	Locating Report#	3/4 AN
			4	Ship Name or Class	1/30 ANBS
			5	Ship Type, Category	2-5 A
			6	Nationality	2 A
			7	Contact Photo Status	3 A
		FORCODE	1	Force Threat Designator	2 N
		ATTACK	1	Ordnance/Weapon Type, Maritime Unique	3-13 ANBS
			2	Attack Results	3-12 A
		TMPOS	1	Day - Time	7/8 AN
			2	Target Location	11/14 ANS
			3	Contact Course, True	4 AN
			4	Speed of Contact or Target In Knots	4-7 ANS
			5	Mission Event	4-7 AS
			6	Sensor Platform	3-4 A
			7	Sensor Code	2-6 AN
		EMITTER	1	Emitter Designation	1-15 ANBS
			2	Credibility	3-4 A
			3	ELINT Notation or Sorting Code	4/5 AN

MSG No.	**Msg Name**	**Mandatory Set ID.**	**Field No.**	**Mandatory Data Element**	**Structure**
		SIGNA	1	Acoustic Source	1-15 ANBS
			2	Acoustic Freq. Nearest One Thousandth Hertz	7-10 ANS 1-22 NS 1-4 NS
			3	Harmonic	4-7 ANS
			6	Verified Day -Time	8 AN
			7	Month Name	3 A
		AIR	1	Contact Serial #	1-3 N
			2	Unit Designation	1-30 ANBS
			3	Report Number	3/4 AN
			4	Aircraft Type and Model	2-6 AN
			5	Credibility	3-4 A
			6	Number of Aircraft Reported	1-2 N
			7	Nationality	2 A
			8	Contact Photo Status	3 A
		FORCODE	1	Force Threat Designator	2 N
		TMPOS	1	Day - Time	7/8 AN
			2	Target Location	11/14 ANS
			3	Contact Course, True	4 AN
			4	Speed of Contact or Target in Knots	4-7 ANS
			5	Mission Event	4-7 AS
			6	Sensor Platform	3-4 A
			7	Sensor Code	2-6 AN
		ATTACK	1	Ordnance/Weapon Type, Maritime Unique	3-13 ANBS
			2	Attack Results	3-12 A

MSG No.	**Msg Name**	**Mandatory Set ID.**	**Field No.**	**Mandatory Data Element**	**Structure**
		TMPOS	1	Day - Time	7/8 AN
			2	Target Location	11/14 ANS
			3	Contact Course, True	4 AN
			4	Speed of Contact or Target in Knots	4-7 ANS
			5	Mission Event	4-7 AS
			6	Sensor Platform	3-4 A
			7	Sensor Code	2-6 AN
		EMITTER	1	Emitter Designation	1-15 ANBS
			2	Credibility	3-4 A
			3	ELINT Notation or Sorting Code	4/5 AN
		MERCH	1	Contact Serial #	1-3 N
			2	Ship Name	1-30 ANBS
			3	Ship Type Id.	2-8 A
			4	Nationality	2A
			5	Contact Photo Status	3A
		FORCODE	1	Force Threat Designator	2 N
		ATTACK	1	Ordnance/Weapon Type, Maritime Unique	3-13 ANBS
			2	Attack Results	3-12 A
		TMPOS	1	Day - Time	7/8 AN
			2	Target Location	11/14 ANS
			3	Contact Course, True	4 AN
			4	Speed Of Contact or Target in Knots	4-7 ANS
			5	Mission Event	4-7 AS
			6	Sensor Platform	3-4 A
			7	Sensor Code	2-6 AN
MSG		**Mandatory**	**Field**	**Mandatory**	

No.	Msg Name	Set ID.	No.	Data Element	Structure
		EMITTER	1	Emitter Designation	1-15 ANBS
			2	Credibility	3-4 A
			3	ELINT Notation or Sorting Code	4/5 AN
		SIGNA	1	Acoustic Source	1-15 ANBS
			2	Acoustic Frequency, Nearest One Thousandth Hertz	7-10 ANS
				Harmonic	
			3	Verified Day -Time	1-22 NS
			6	Month Name	8 AN
			7		3 A
		FISHCTC	1	Contact Serial #	1-3 N
			2	Ship Name	1-30 ANBS
			3	Ship Type ID.	2-8 A
			4	Nationality	2 A
			5	Contact Photo Status	3 A
		FORCODE	1	Force Threat Designator	2 N
		ATTACK	1	Ordnance/Weapon Type, Maritime Unique	3-13 ANBS
			2	Attack Results	3-12 A
		TMPOS	1	Day - Time	7/8 AN
			2	Target Location	11/14 ANS
			3	Contact Course, True	4 AN
			4	Speed of Contact or Target in Knots	4-7 ANS
			5	Mission Event	4-7 AS
			6	Sensor Platform	3-4 A
			7	Sensor Code	2-6 AN
		EMITTER	1	Emitter Desig.	1-15 ANBS
			2	Credibility	3-4 A
			3	ELINT Notation or Sorting Code	4/5 AN

MSG No.	Msg Name	Mandatory Set ID.	Field No.	Mandatory Data Element	Structure
		SIGNA	1	Acoustic Source	1-15 ANBS
			2	Acoustic Frequency, Nearest One Thousandth Hertz	7-10 ANS
			3	Harmonic	1-22 NS
			6	Verified Day -Time	8 AN
			7	Month Name	3 A
		PCAFT	1	Contact Serial #	1-3 N
			2	Vessel Name	1-30 ANBS
			3	Nationality	2 A
			4	Contact Photo Status	3 A
			5	Hull Color	3-6 A
			6	Suspicion Code	2 N
		FORCODE	1	Force Threat Designator	2 N
		ATTACK	1	Ordnance/Weapon Type, Maritime Unique	3-13 ANBS
			2	Attack Results	3-12 A
		TMPOS	1	Day - Time	7/8 AN
			2	Target Location	11/14 ANS
			3	Contact Course, True	4 AN
			4	Speed of Contact or Target in Knots	4-7 ANS
			5	Mission Event	4-7 AS
			6	Sensor Platform	3-4 A
			7	Sensor Code	2-6 AN
		EMITTER	1	Emitter Desig.	1-15 ANBS
			2	Credibility	3-4 A
			3	ELINT Notation or Sorting Code	4/5 AN

MSG No.	Msg Name	Mandatory Set ID.	Field No.	Mandatory Data Element	Structure
		SIGNA	1	Acoustic Source	1-15 ANBS
			2	Acoustic Frequency, Nearest One Thousandth Hertz	7-10 ANS
			3	Harmonic	1-22 NS
			6	Verified Day - Time	8 AN
			7	Month Name	3 A
		UNK	1	Contact Serial #	1-3 N
			2	Trademark	1/30 ANBS
		FORCODE	1	Force Threat Designator	2 N
		EMITTER	1	Emitter Desig.	1-15 ANBS
			2	Credibility	3-4 A
			3	ELINT Notation or Sorting Code	4/5 AN
		SIGNA	1	Acoustic Source	1-15 ANBS
			2	Acoustic Frequency, Nearest One Thousandth Hertz	7-10
			3	Harmonic	1-22 NS
			6	Verified Day - Time	8 AN
			7	Month Name	3 A

MSG No.	**Identifier/Msg Name**	**Mandatory Set ID.**	**Field No.**	**Mandatory Data Element**	**Structure**
NA	OTH-T GOLD/ OPNOTE	MSGID	1	Command (Originator) Message Identifier	1-14 ANBS
			2	"GOLD" Message Serial No.	3-9 ANBS
			3	Month	4-5 N
			4		3A
NA	OTH-T GOLD/ OPNOTE	NARR	1	Free Text	1-64ANBS
NA	OTH-T GOLD/ OPNOTE	ENDAT	1	End of Data - Downgrading Instructions	1-63 ANBS

MSG No.	**Msg Name**	**Mandatory Set ID.**	**Field No.**	**Mandatory Data Element**	**Structure**
NA	OTH-T GOLD/ CONTACT	MSGID	1	Command (Originator)	1-14 ANBS
				Message Identifier	
			2	“GOLD”	3-9 ANBS
				Message Serial No.	
			3	Month	4-5 N
			4		3A
NA	OTH-T GOLD/ CONTACT	ENDAT	1	End of Data - Downgrading Instructions	1-63 ANBS

APPENDIX B
Message Text Formats

Message ID:	**IIR**
Index Reference Number:	C100
Message Text Format Name:	Image Interpretation Report
Function or Purpose:	The IIR is used to provide an image interpretation report.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
M	RPTID	4	/M/M/M/O/O/M//	Report Identification
O	HILITES	5	/M//	Mission Highlights
M	ITEMTYP	6	/M//	Type of items reported
M	ITEM	7	/M/M/M/O/C/M/M//	Identification of Order of Battle (OB) items
C	LOC	8	/O/C//	Location
O	OTID	9	/C/C/C/C/O/O//	Imagery location
O	ERREF	10	/M//	Exploitation requirement reference
O	TPREF	11	/M/M/O/M//	Topic report reference
M	STATACT	12	/M/O/O/C/C/C/O//	Target status information
C	DES	13	/M//	Installation description
C	RMK	14	/M//	Target and/or activity remarks
O	DFC	15	/M//	Defense and/or security comments
M	OBID	16	/M/M/M/O/O/O/C/C//	OB identification data
C	OBEQ	17	/M/M/M/O/O//	OB equipment information
O	UNITID	18	/M//	Unit identity
M	IMR	19	/M/O/M/M/M/M/O/O/O/M//	Imagery reference data
M	IMDATA	20	/M/M/M/O/O/C/O/O//	Imagery data
O	IDC	21	/O/C/M//	Imagery derived coordination
C	HEADING	22	/M//	Collection objectives satisfied
C	AMPN	23	/M//	Amplification
M	ITEM	24	/M/M/M/O/C/M/M//	Identification of OB items
C	LOC	25	/O/C//	Location
M	IMR	26	/M/O/M/M/M/M/O/O/O/M//	Imagery reference data

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
M	IMDATA	27	/M/M/M/O/O/C/O/O//	Imagery data
C	HEADING	28	/M//	Collection objectives not satisfied
C	AMPN	29	/M//	Amplification
M	ITEM	30	/M/M/M/O/C/M/M//	Identification of OB items
C	LOC	31	/O/C//	Location
O	RMKS	32	/M//	Remarks
O	DECL	33	/M//	Declassification Data

Message ID:	**RECCEXREP**
Index Reference Number:	C101
Message Text Format Name:	Reconnaissance Exploitation Report
Function or Purpose:	The RECCEXREP is used to provide an abbreviated imagery interpretation report format for tactical reporting.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	MISSNID	7	/M/M/O/M/M/O//	Mission ID
M	ITEM	8	/M/M/M/O/C/M/M//	Identification of OB Items
C	LOC	9	/O/C//	Location
M	TOT	10	/M/M/M/M/M/M/M/O//	Time on target
M	NARR	11	/M//	Narrative Information
O	TARWI	12	/M/M/M/M/M//	Target Weather Information
O	IMDAT	13	/O/O/O/O/O/O/C/O//	Imagery Data
O	DECL	14	/M//	Declassification Data

Message ID:	**OBREP**
Index Reference Number:	C103
Message Text Format Name:	Order of Battle Report
Function or Purpose:	The OBREP is used to provide the latest Order of Battle Information.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	ITEMOB	7	/M/MC/O/C/O/O/O/C//	Identification of Order of Battle (OB) items.
M	OBLOC	8	/M/C/O/O/O/O/O/O//	OB location.
O	STATACOB	9	/M/O/O/O/O/O/O/O//	OB target status.
O	PSOAB	10	/M/M/M/O//	Post strike assessment order of battle conclusions
O	GENTEXT	11	/M/M//	End of segment
M	OBEQUIP	12	/M/M/M/O/O//	OB equipment information
M	OBLOC	13	/M/C/O/O/O/O/O/O//	OB location
O	EMTREW	14	/M/*O//	Electronic emitter data
O	PSAOB	15	/M/M/M/O//	Post strike assessment order of battle
O	GENTEXT	16	/M/M//	Conclusions
M	EMTAVG	17	/M/M/O/O/O/O/O/O/O/O//	Observed emitter parametric averages
O	EMTLMT	18	/M/M/O/O/O/O/O/O/O/O//	Observed emitter parametric limits
O	DECL	19	/M//	Declassification Data

Message ID: **TACREP**
Index Reference Number: C111
Message Text Format Name: Tactical Report
Function or Purpose: The TACREP is used only to provide perishable information of tactical significance, provided for the immediate attention of the tactical commander(s).

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
O	ALERTWRD	7	/M//	Alerting Information
C	ACTY	8	/M/M/O//	Activity Data
O	TAC	9	/O/C/O//	Target Acquisition Credibility
C	MAROP	10	/M/M/M/M/M/M/M/O//	Maritime Operation Data
C	AIROP	11	/M/M/M/M/M/M/M/O//	Air Operations Data
C	GNDOP	12	/M/M/M/M/M/M/M/O//	Ground Operations Data
O	OPSUP	13	/O//	Supplementary Operations Data
C	TRK	14	/M/M/M/O//	Track Data
O	COMEW	15	/M/O/M//	Communications Data
O	EMTREW	16	/M/O//	Electronics Emitter Data
O	AUDIT	17	/M/M/O//	Cross Reference Line
C	AMPN	18	/M//	Amplification
O	SIGN	19	/M/M/M/O/O//	Signature
O	DECL	20	/M//	Declassification Data

Message ID:	**LOCATOR**
Index Reference Number:	C325
Message Text Format Name:	Maritime Force Locator
Function or Purpose:	The LOCATOR message is used to report surface or subsurface, air, or special interest units operating in the maritime environment.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	HEADING	7	/M//	MULTIPLE CONTACTS
C	SUB	8	/M/M/M/M/M/M/O/O/O/O/O//	SUBMARINE CONTACT
O	NAVAL	9	/M/M/M/M/M/M/M/O/O/O/O//	NAVAL SURFACE CONTACT
O	MERCH	10	/M/M/M/M/M/O/O/O/*O//	MERCHANT SHIP CONTACT
O	FISHCTC	11	/M/M/M/M/M/O/O/O/O/O/O//	FISHING VESSEL CONTACT
O	PCRAFT	12	/M/M/M/M/M/M/O/O/O/O//	PLEASURE CRAFT CONTACT
C	ELLIPSE	13	/M/M/M/M//	ELLIPSE
C	CIRC	14	/M/*M//	CIRCULAR AREA
C	AREA	15	/*M//	AREA
C	TIMEVENT	16	/M/M/M/M/M/O/O/O//	TIME INFORMATION
C	TMPOS	17	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
O	ARRPLACE	18	/M/M/M/M/M/O/O/*O//	ARRIVAL PLACE
O	INPPLACE	19	/M/M/M/M/M/O/O/*O//	INPORT PLACE
O	DEPPLACE	20	/M/M/M/M/M/O/O/*O//	DEPARTURE PLACE
O	DESPLACE	21	/M/M/O/O//	DESTINATION PLACE
M	SUB	22	/M/M/M/M/M/M/O/O/O/O/O//	SUBMARINE CONTACT
M	FORCODE	23	/M//	FORCE CODE
O	ASSOC	24	/*M//	ASSOCIATION
C	ELLIPSE	25	/M/M/M/M//	ELLIPSE
C	CIRC	26	/M/*M//	CIRCULAR AREA
C	AREA	27	/*M//	AREA

FIELD USE	**SET ID**	**SEQ.**	**FIELD ORDER AND USE**	**SET FORMAT NAME**
C	TIMEVENT	28	/M/M/M/M/M/O/O/O//	TIME INFORMATION
O	BRNG	29	/M/M/M/O/O/O/M/O//	BEARING
C	TMPOS	30	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
O	RELPO	31	/M/M/M/M/M/O/O//	RELATIVE TO OWN POSITION
O	REACT	32	/M/M/M/M/M/O//	REACTION
C	TMPOS	33	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	ATTACK	34	/M/M/O/O/O/O//	ATTACK
M	TMPOS	35	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	EMITTER	36	/M/M/M/O/O/O//	EMITTER IDENTIFICATION
O	BRNG	37	/M/M/M/O/O/O/M/O//	BEARING
O	RADPA	38	/M/O/O/O/O/O/O/O/O//	RADAR PARAMETERS
M	SIGNA	39	/M/M/M/O/O/M/M/O/O//	SIGNATURE
O	SIGSUM	40	/M/M/M/O//	SIGNATURE SUMMATION
O	MODE	41	/C/O/O/C/C//	SUBMARINE OPERATING MODE
O	AMODE	42	/C/O/O/C/C//	ALTERNATIVELY DETERMINED SUBMARINE OPERATING MODE
O	SUMRY	43	/M/M/M/M/M/M/O//	CONTACT SUMMARY
O	ARRPLACE	44	/M/M/M/M/M/O/O/*O//	ARRIVAL PLACE
O	INPPLACE	45	/M/M/M/M/M/O/O/*O//	INPORT PLACE
O	DEPPLACE	46	/M/M/M/M/M/O/O/*O//	DEPARTURE PLACE
O	DESPLACE	47	/M/M/O/O//	DESTINATION PLACE
M	NAVAL	48	/M/M/M/M/M/M/M/O/O/O/O//	NAVAL SURFACE CONTACT
M	FORCODE	49	/M//	FORCE CODE
O	ASSOC	50	/*M//	ASSOCIATION
C	ELLIPSE	51	/M/M/M/M//	ELLIPSE
C	CIRC	52	/M/*M//	CIRCULAR AREA
C	AREA	53	/*M//	AREA
C	TIMEVENT	54	/M/M/M/M/M/O/O/O//	TIME INFORMATION
O	BRNG	55	/M/M/M/O/O/O/M/O//	BEARING
C	TMPOS	56	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
O	RELPO	57	/M/M/M/M/M/O/O//	RELATIVE TO OWN POSITION
O	REACT	58	/M/M/M/M/M/O//	REACTION

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	TMPOS	59	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	ATTACK	60	/M/M/O/O/O/O//	ATTACK
M	TMPOS	61	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	EMITTER	62	/M/M/M/O/O/O//	EMITTER IDENTIFICATION
O	BRNG	63	/M/M/M/O/O/O/M/O//	BEARING
O	RADPA	64	/M/O/O/O/O/O/O/O//	RADAR PARAMETERS
M	SIGNA	65	/M/M/M/O/O/M/M/O/O//	SIGNATURE
O	SIGSUM	66	/M/M/M/O//	SIGNATURE SUMMATION
O	SUMRY	67	/M/M/M/M/M/M/O//	CONTACT SUMMARY
O	ARRPLACE	68	/M/M/M/M/M/O/O/*O//	ARRIVAL PLACE
O	INPPLACE	69	/M/M/M/M/M/O/O/*O//	INPORT PLACE
O	DEPPLACE	70	/M/M/M/M/M/O/O/*O//	DEPARTURE PLACE
O	DESPLACE	71	/M/M/O/O//	DESTINATION PLACE
M	AIR	72	/M/M/M/M/M/M/M/M/O//	AIRCRAFT CONTACT
M	FORCODE	73	/M//	FORCE CODE
O	ASSOC	74	/*M//	ASSOCIATION
M	TMPOS	75	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
O	REACT	76	/M/M/M/M/M/O//	REACTION
C	TMPOS	77	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	ATTACK	78	/M/M/O/O/O/O//	ATTACK
M	TMPOS	79	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	EMITTER	80	/M/M/M/O/O/O//	EMITTER IDENTIFICATION
O	BRNG	81	/M/M/M/O/O/O/M/O//	BEARING
O	RADPA	82	/M/O/O/O/O/O/O/O//	RADAR PARAMETERS
M	MERCH	83	/M/M/M/M/M/O/O/O/*O//	MERCHANT SHIP CONTACT
M	FORCODE	84	/M//	FORCE CODE
O	ASSOC	85	/*M//	ASSOCIATION
C	ELLIPSE	86	/M/M/M/M//	ELLIPSE
C	CIRC	87	/M/*M//	CIRCULAR AREA
C	AREA	88	/*M//	AREA
C	TIMEVENT	89	/M/M/M/M/M/O/O/O//	TIME INFORMATION
O	BRNG	90	/M/M/M/O/O/O/M/O//	BEARING
C	TMPOS	91	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
O	RELPO	92	/M/M/M/M/M/O/O//	RELATIVE TO OWN POSITION
O	RIG	93	/M/M/O/O/O/O//	SURFACE SHIP

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
				RIGGING
O	REACT	94	/M/M/M/M/M/O//	REACTION
C	TMPOS	95	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	ATTACK	96	/M/M/O/O/O/O//	ATTACK
M	TMPOS	97	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	EMITTER	98	/M/M/M/O/O/O//	EMITTER IDENTIFICATION
O	BRNG	99	/M/M/M/O/O/O/M/O//	BEARING
O	RADPA	100	/M/O/O/O/O/O/O/O//	RADAR PARAMETERS
M	SIGNA	101	/M/M/M/O/O/M/M/O/O//	SIGNATURE
O	SIGSUM	102	/M/M/M/O//	SIGNATURE SUMMATION
O	SUMRY	103	/M/M/M/M/M/M/O//	CONTACT SUMMARY
O	ARRPLACE	104	/M/M/M/M/M/O/O/*O//	ARRIVAL PLACE
O	INPPLACE	105	/M/M/M/M/M/O/O/*O//	INPORT PLACE
O	DEPPLACE	106	/M/M/M/M/M/O/O/*O//	DEPARTURE PLACE
O	DESPLACE	107	/M/M/O/O//	DESTINATION PLACE
M	FISHCTC	108	/M/M/M/M/M/O/O/O/O/O/O//	FISHING VESSEL CONTACT
M	FORCODE	109	/M//	FORCE CODE
O	ASSOC	110	/*M//	ASSOCIATION
C	ELLIPSE	111	/M/M/M/M//	ELLIPSE
C	CIRC	112	/M/*M//	CIRCULAR AREA
C	AREA	113	/*M//	AREA
C	TIMEVENT	114	/M/M/M/M/M/O/O/O//	TIME INFORMATION
O	BRNG	115	/M/M/M/O/O/O/M/O//	BEARING
C	TMPOS	116	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
O	RELPO	117	/M/M/M/M/M/O/O//	RELATIVE TO OWN POSITION
O	REACT	118	/M/M/M/M/M/O//	REACTION
C	TMPOS	119	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	ATTACK	120	/M/M/O/O/O/O//	ATTACK
M	TMPOS	121	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	EMITTER	122	/M/M/M/O/O/O//	EMITTER IDENTIFICATION
O	BRNG	123	/M/M/M/O/O/O/M/O//	BEARING
O	RADPA	124	/M/O/O/O/O/O/O/O//	RADAR PARAMETERS
M	SIGNA	125	/M/M/M/O/O/M/M/O/O//	SIGNATURE
O	SIGSUM	126	/M/M/M/O//	SIGNATURE SUMMATION
O	SUMRY	127	/M/M/M/M/M/M/O//	CONTACT SUMMARY

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
O	ARRPLACE	128	/M/M/M/M/M/O/O/*O//	ARRIVAL PLACE
O	INPPLACE	129	/M/M/M/M/M/O/O/*O//	INPORT PLACE
O	DEPPLACE	130	/M/M/M/M/M/O/O/*O//	DEPARTURE PLACE
O	DESPLACE	131	/M/M/O/O//	DESTINATION PLACE
M	PCRAFT	132	/M/M/M/M/M/M/O/O/O/O//	PLEASURE CRAFT CONTACT
M	FORCODE	133	/M//	FORCE CODE
O	ASSOC	134	/*M//	ASSOCIATION
C	ELLIPSE	135	/M/M/M/M//	ELLIPSE
C	CIRC	136	/M/*M//	CIRCULAR AREA
C	AREA	137	/*M//	AREA
C	TIMEVENT	138	/M/M/M/M/M/O/O/O//	TIME INFORMATION
O	BRNG	139	/M/M/M/O/O/O/M/O//	BEARING
C	TMPOS	140	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
O	RELPO	141	/M/M/M/M/M/O/O//	RELATIVE TO OWN POSITION
O	REACT	142	/M/M/M/M/M/O//	REACTION
C	TMPOS	143	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	ATTACK	144	/M/M/O/O/O/O//	ATTACK
M	TMPOS	145	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION
M	EMITTER	146	/M/M/M/O/O/O//	EMITTER IDENTIFICATION
O	BRNG	147	/M/M/M/O/O/O/M/O//	BEARING
O	RADPA	148	/M/O/O/O/O/O/O/O/O//	RADAR PARAMETERS
M	SIGN	149	/M/M/M/O/O/M/M/O/O//	SIGNATURE
O	SIGSUM	150	/M/M/M/O//	SIGNATURE SUMMATION
O	SUMRY	151	/M/M/M/M/M/M/O//	CONTACT SUMMARY
O	ARRPLACE	152	/M/M/M/M/M/O/O/*O//	ARRIVAL PLACE
O	INPPLACE	153	/M/M/M/M/M/O/O/*O//	INPORT PLACE
O	DEPPLACE	154	/M/M/M/M/M/O/O/*O//	DEPARTURE PLACE
O	DESPLACE	155	/M/M/O/O//	DESTINATION PLACE
M	UNK	156	/M/M//	UNKNOWN CONTACT
M	FORCODE	157	/M//	FORCE CODE
O	ASSOC	158	/*M//	ASSOCIATION
C	ELLIPSE	159	/M/M/M/M//	ELLIPSE
C	CIRC	160	/M/*M//	CIRCULAR AREA
C	AREA	161	/*M//	AREA
C	TIMEVENT	162	/M/M/M/M/M/O/O/O//	TIME INFORMATION
O	BRNG	163	/M/M/M/O/O/O/M/O//	BEARING
C	TMPOS	164	/M/M/M/M/M/M/M/O/O/O/O//	TIME AND POSITION

FIELD USE	**SET ID**	**SEQ.**	**FIELD ORDER AND USE**	**SET FORMAT NAME**
O	RELPO	165	/M/M/M/M/M/O/O//	RELATIVE TO OWN POSITION
M	EMITTER	166	/M/M/M/O/O/O//	EMITTER IDENTIFICATION
O	BRNG	167	/M/M/M/O/O/O/M/O//	BEARING
O	RADPA	168	/M/O/O/O/O/O/O/O//	RADAR PARAMETERS
M	SIGNA	169	/M/M/M/O/O/M/M/O/O//	SIGNATURE
O	SIGSUM	170	/M/M/M/O//	SIGNATURE SUMMATION
O	SUMRY	171	/M/M/M/M/M/M/O//	CONTACT SUMMARY
O	ARRPLACE	172	/M/M/M/M/M/O/O/*O//	ARRIVAL PLACE
O	INPPLACE	173	/M/M/M/M/M/O/O/*O//	INPORT PLACE
O	DEPPLACE	174	/M/M/M/M/M/O/O/*O//	DEPARTURE PLACE
O	DESPLACE	175	/M/M/O/O//	DESTINATION PLACE
O	DECL	176	/M//	MESSAGE DOWNGRADING OR DECLASSIFICATION DATA

Message ID:	**RECON 1**
Index Reference Number:	E631
Message Text Format Name:	Reconnaissance Nickname report
Function or Purpose:	The RECON 1 is used to report additions, changes, or deletions of operation order numbers and associated nicknames for reconnaissance operations.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	RECONICK	7	/M//	Nickname report
M	OPSORD	8	/M//	Operations order
M	NICKNAME	9	/M/M/M//	Mission nickname
C	MSNTYPE	10	/M/M/O//	Mission Type
O	GENTEXT	11	/M/M//	Additional Information
O	DECL	12	/M//	Message downgrading or declassification

Message ID:	**RECON 2**
Index Reference Number:	E632
Message Text Format Name:	Reconnaissance Track report
Function or Purpose:	The RECON 2 is used to submit proposed reconnaissance tracks for mission approval and to modify or delete existing active reconnaissance tracks.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	RECONTRK	7	/M//	Track report
M	TRACKID	8	/M/M/M//	Track Identifier
C	OPAREA	9	/M//	Operating area
C	ASSESSMT	10	/M//	Mission Assessment
C	GROUP	11	/M//	Track approval authority
C	1EVENTS	12	/M/M/M/M/C/C/C//	Track events
C	2ORBITS	13	/M/M/M/M//	Orbit information
C	AREATIME	14	/M//	Time in sensitive area
C	GENTEXT	15	/M/M//	Track remarks
O	GENTEXT	16	/M/M//	Additional Information
O	DECL	17	/M//	Message downgrading or declassification

Message ID:	**RECON 3**
Index Reference Number:	E633
Message Text Format Name:	Reconnaissance Scheduling report
Function or Purpose:	The RECON 3 is used to provide selected and specific data on proposed reconnaissance mission schedules, changes to approved schedules, and CINC/Unit intent to fly specific reconnaissance missions.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	SCHEDULE	7	/M//	Schedule Report
M	SCHDPER	8	/M/M//	Mission schedule period
C	CAUSE	9	/M/C//	Cause for abort or deviation
M	MSNNAME	10	/M//	Active Mission Nickname
M	1MSNDATA	11	/M/C/C/C/O/C/C/C/C/C/O/O//	Mission Data
O	TRKOPTS	12	/M/M/M//	Reconnaissance Mission Track Options
O	GENTEXT	13	/M/M//	Track Data
C	CRDDATA	14	/M/M/M//	Coordinated Mission Data
O	GENTEXT	15	/M/M//	Special Data
O	GENTEXT	16	/M/M//	Scheduling remarks
O	GENTEXT	17	/M/M//	Additional Information
O	DECL	18	/M//	Message downgrading or declassification

Message ID:	**RECON 4**
Index Reference Number:	E634
Message Text Format Name:	Reconnaissance Following report
Function or Purpose:	The RECON 4 is used to provide specific information pertaining to reconnaissance mission flight following.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	FOLLOW	7	/M//	Follow report
M	MISSION	8	/M/M//	Mission identifier
C	ATD	9	/M/C//	Actual time of departure and base
C	ETA	10		Estimated time of arrival and base
C	ATA	11		Actual time of arrival and base
C	STATUS	12		Mission Status
C	CAUSE	13		Cause for abort or deviation
O	GENTEXT	14	/M/M//	Mission following remarks
O	GENTEXT	15	/M/M//	Additional Information
O	DECL	16	/M//	Message downgrading or declassification

Message ID:	**RI**
Index Reference Number:	F014
Message Text Format Name:	Request for Information
Function or Purpose:	The RI is used to request information from other units. It may also be used to request the status of an anticipated response to another request.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	**SET ID**	**SEQ.**	**FIELD ORDER AND USE**	**SET FORMAT NAME**
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
O	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	REQDAT	7	/M/O/O//	Information requirements priority data
O	TRCPLOT	8	/M/O/O//	Location trace plot
M	NARR	9	/M/C//	Narrative information
O	GENTEXT	10		Method response
O	DECL	11	/M//	Message downgrading or declassification

Message ID:	**RRI**
Index Reference Number:	F015
Message Text Format Name:	Response to Request for Information
Function or Purpose:	The RRI is used to reply to requests for information. If the information is contained in a previous message, the RRI should reference that message.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
C	EXER	1	/M/O//	Exercise ID
O	OPER	2	/M/O/O/O//	Operation ID
M	MSGID	3	/M/M/O/O/O/O//	Msg Identifier
M	REF	4	/M/M/M/M/O/O/O//	Reference
C	AMPN	5	/M//	Amplification
C	NARR	6	/M//	Narrative Information
M	RMKS	7	/M//	Remarks
O	DECL	8	/M//	Message downgrading or declassification

Message ID:	**OTH-T GOLD - Contact Report**
Index Reference Number:	N/A
Message Text Format Name:	OTH-T GOLD - Contact Report message.
Function or Purpose:	The OTG is used for the exchange of processed track data or track management information between computer systems.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
M	MSGID	1	/M/M/M/M/O/O/O	Msg Identifier
O	DEL	2	/M/M/O	Delete
O	DLOB	3	/M/M/M/M/M/M/O/M/O	Delete line of bearing
O	DPOS	4	/M/M/M/M/M/O/O/M/O	Delete position
O	MRG	5	/M/M/M/M/O/O	Merge
C	CTC	6	/M/M/O/O/O/O/O/O/O/O/M/O/M/O/O/O/O/O	Contact
C	POS	7	/M/M/M/M/O/C//O/O/O//O/O/O/O/O	Position
O	RAD	8	/M/M/C/C/O/O/O/O/O/O	Radar data
O	RADB	9	/M/M/C/C/O/O/O/O/O/O	Expanded radar data
O	EOB	10	/C/C	Electronic Order of Battle
C	LOB	11	/M/M/M/M/M/O/O/C/O/O/O	Line of bearing
O	RAD	12	/M/M/C/C/O/O/O/O/O/O	Radar data
O	RADB	13	/M/M/C/C/O/O/O/O/O/O	Expanded radar data
O	EOB	14	/C/C	Electronic Order of Battle
O	GOB	15	/O/O/O/O	Ground Order of Battle
O	UIC	16	/*M	Unit identification code
O	PAIR	17	/C/C/C/C/O/O/O/O/O/O/O/O	Pair
O	PCRFT	18	/M/M/M/M/M/M/O/O/O/O	Pleasure craft data
O	RIG	19	/O/O/O/O/O/O/O	Rigging
O	ARR	20	/M/M/O/O/O/O/O/O	Arrival
O	DEP	21	/M/M/O/O/O/O/O/O	Departure
O	DES	22	/M/M/O/O/O/O/O/O	Destination
O	RIG	23	/O/O/O/O/O/O/O	Rigging
O	SIGNA	24	/M/M/M/O/O	Signature
O	RTD	25	/C/C	Real time data
O	RMKS	26	/M	Remarks
M	ENDAT	27	/O	End of data

Message ID:	**OTH-T GOLD OPNOTE**
Index Reference Number:	N/A
Message Text Format Name:	Operator Note
Function or Purpose:	The OTG OPNOTE is used to manually resolve ambiguities and errors between computer databases and /or exchange operator information.

Field Occurrence/Use (M = Mandatory, C = Conditional, O = Operationally Determined)

FIELD USE	SET ID	SEQ.	FIELD ORDER AND USE	SET FORMAT NAME
M	MSGID	1	/M/M/M/M/O/O/O	Msg Identifier
M	NARR	3	/M	Narrative Information
O	WEX	4	/O/O/O/O/O/O/O/O/O/O	Weather
M	ENDAT	5	/O	End of Data